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H O M E - N U R S I N G .

BY A LADY.

YOUNG AND OLD.

In treating the question of nursing, we have hitherto confined our attention to those general rules which are applicable to all forms of illness; we now propose dealing with a few of the more marked and special varieties of condition and disease.

As regards condition, the question of a patient's age plays a prominent part, and what would pass muster as ordinary care in the case of an adult, might be actual neglect in dealing with a child; for not only are children more delicate and sensitive, but they are also at a great disadvantage, in being unable to give proper expression to their feelings of suffering; and though, when a child complains of pain, we are quite sure the complaint is genuine, this is often about all the information inexperience can gather. In regard to infants, the difficulty is even greater, for almost the only guide we have is in a change of cry; and though most mothers quickly learn to distinguish between the cries of ordinary passing pain, of hunger, and of temper, there are few who can distinguish those subtler differences in a persistently altered cry, which to trained ears tell their own tale. But the most inexperienced may understand this, that if a changed cry continues, extra watching is needed; and should a warm bath fail to give relief and restore smiles, it will be safer to call in medical aid. In this connection, I cannot too earnestly warn mothers and nurses against the dangerous practice of perpetually dosing their children. In more than one nursery I could name, it is the rule, as soon as a child is 'tiresome,' to punish it with a dose of medicine, from which it turns in loathing, and about which the mother knows as little as she does of the wonderful and complex structure she is thus maltreating. Home-doctoring is bad enough when practised on the comparatively strong frame of an

adult; but the delicate, finely poised mechanism of child-life may be so affected by the injudicious use of powerful drugs, that the innocent sufferer shall pay a lasting penalty for the presumptuous ignorance of its home-doctor.

Broadly speaking, if a child is ill enough to need medicine, it* is ill enough to need a doctor; but at the same time, a mother of ordinary intelligence may easily learn so much of the laws of health as, by judicious diet, exercise, clothing, and bathing, to avoid much unnecessary suffering in the nursery.

It is not within our present province to speak of the management of children in health; but in their case, acute disease is liable to run such a quick course, that warnings of danger should never go unheeded. There is one set of symptoms so grave, that even the most inexperienced may take warning of the near approach of danger. When an ordinarily lively child becomes suddenly, or gradually, listless and dull, turns away from its toys, and seeks only some place on which to rest its weary head, there is distinct threatening of trouble, and no time should be lost in seeking medical help. In such cases, it sometimes happens that a child will be much easier if held in the arms than if put to bed, where it loses the sense of comfort derived from a supporting arm. Should this necessity arise, it will greatly help a nurse if she can obtain a hammock-chair, an excellent invention, so contrived that the angle can be altered at will, and which, moreover, gives to the figure in such a way as to insure ease and support. Failing this, a low rocking-chair may be used, which, by the aid of a footstool or second chair, will allow the nurse to keep in a semi-recumbent position, which of itself is a great relief. It is also a comfort to have the weight of the child taken off, by passing a towel or shawl round the supporting arm and its burden, and then fastening the ends round the opposite corner of the nurse's chair.

* The word 'it' is here used for convenience-sake, and applies, of course, alike to male and female children.

Should the case be lengthened, or the nurse feel herself unequal to what is certainly trying work, she can best help her patient by placing it in bed, supported by one of those netted hammocks we referred to in a former paper. This will give a feeling of security; and by careful watching, the nurse should be able, at the instant of waking, to take its little hands in hers and speak soothing words, which shall dispel its terrors. If the face is a well-known one, the effect will be greater; and for this reason, home-nursing has a decided advantage; but where there is no excessive fright, it might almost be said that in the majority of cases most children have a better chance with any sensible stranger, than with mother or nursemaid; children are so very quick to find out who has to be obeyed, and are equally sharp in discovering the advantage to be taken of love unbalanced by wisdom. I have seen a small child, threatened with bronchitis, refuse to allow mother or nurse to give her her medicine, or the prescribed hot bath; and instead of being well wrapped up and poulticed, she insisted upon being carried about on a chilly night without extra covering; yet, with a kindly stranger, the same child became a model of propriety, and took her medicine without a murmur.

In home-nursing, there is sometimes difficulty in keeping a child who is not very ill, in bed; and I have heard it gravely said: 'Yes, I know Tommy ought to be in bed; the doctor was saying so this morning; but it's no good, for he won't keep there.' Imagine the work of a hospital ward, if the small patients wouldn't stay in bed! The plan in such places is, to let all the children who are well enough sit up in bed, well wrapped up, and with their toys on a sliding tray, pushed close up to them; and I would advise those mothers who spoil and pamper their children in illness, to pay a visit to any hospital, and see how happily even the tiniest will amuse themselves for hours, though the chances are ten to one those same children would whine and fret to any extent if by so doing they could draw attention to every whim and fancy. This applies, of course, to milder cases only. In serious illness, the child's utter helplessness demands the greatest care and watchfulness; and it must never be forgotten that a child is exquisitely sensitive to external influences, so that all we have said as to cleanliness, &c., applies with double force to the nursing and tending of children. It must also be remembered that the skin is very delicate, and many a child has been terrified beyond expression by a too hot application; indeed, so true is this, that no counter-irritant should be used to a child without express orders from a doctor. In preparing a poultice even, a nurse should be very careful not to apply it as she would to an adult, and she should test its heat by her own face. If using for the first time, it will be well to put a piece of flannel between the poultice and the skin, removing it as the child becomes accustomed to the warmth. As a rule, the comfort of the poultice will soon be felt, and there will be no difficulty over a second application.

The same difficulty sometimes occurs in giving a warm bath. I have known children shriek

the whole time, and struggle so violently, that no possible good could result from what, properly managed, should be soothing and comforting. The trouble may arise from the memory of a too hot bath, or the rising steam may frighten a timid child. The best way of dealing with such cases is to prepare the bath out of sight, cover with a blanket, and gently lower the child into it, offering it at the same time a toy or cork to swim in the water; and it will be strange indeed if you have further trouble. But it is necessary, even with these precautions, to be very careful in getting the bath to the right temperature; this should be done by the use of a thermometer, according to the doctor's orders. Should a bath be needed in a hurry, the heat should be tested by the arm or elbow, never by the hand alone, which is far less sensitive than protected skin.

One word of warning in regard to the administration of remedies to children. If the nurse is asked whether the medicine is nasty or the blister will hurt, let the answer be the plain truth: 'It is disagreeable, but it will do you good,' and there may well be added the inducement of a harmless sweet or biscuit, if the medicine is well taken or the pain bravely borne. Apart from considerations of right and wrong, nothing is gained by attempting to deceive a child; you may succeed the first time, you certainly will not the second; and once lose a child's confidence, and you have lost your greatest hold upon it; whilst, if the child is quite sure you will not deceive it, it will trust you afterwards. Happy the nurse who so wins the love of her little charge, that an approving kiss or shake of the head shall be sufficient reward, or punishment.

In contrast to the special difficulties of nursing children, stand those which have reference to the aged. One or two things must be borne in mind in nursing old people. It generally happens that the faculties become more or less impaired, and the nurse must do her best to supply the deficiencies. With the deaf, she must cultivate a clear way of speaking, and be quick to prevent misunderstandings between her patient and his visitors. With dimmed sight, she must be careful to place everything that he will be likely to need within the patient's reach. And when the taste is affected, extra care will be needed in choosing and flavouring—as far as possible—in accordance with what looks like fancifulness. Elderly people and chronic cases often suffer from cold feet, and a good nurse will anticipate her patient's wants, and, by occasionally putting her hand under the clothes, will easily detect the approach of chilliness. A hot bottle, brick, or tin is generally used for cold feet; but in sickness, I much prefer an india-rubber bag, which is softer and more mouldable. Either variety should be provided with a flannel cover, which can be removed and washed.

In paralysis, insensibility, or great weakness, I advise the use of a good large piece of flannel, in preference to either of the above—to warm it, hold it out before a brisk fire till one side is thoroughly hot; then double it, hold it again to the fire, then fold again, so as to inclose the side just warmed. Repeat the process till the flannel is quite small; open at the bedside, and

you will find a thoroughly comfortable application, which will retain the heat for a considerable time.

Chronic cases are very trying to a nurse's spirits, health, and temper; and if possible, no unprofessional should continue such work uninterrupted for any length of time. In all long-continued illness, there is a tendency towards the patient's becoming fretful and selfish; and in addition to ordinary sickroom work, the nurse will have to make special efforts to take the patient out of himself. Anything he may be able to do for himself, he should be encouraged to undertake; and it will be no little kindness to find him employment, such as reading, drawing, painting, making of scrap-books, fretwork, or easy needlework, according to his capacity and taste.

The furniture, and especially the pictures, should be changed, or at least the position altered, from time to time. If able to get up, there should be at least two or three easy-chairs and footstools of various heights; and if possible, the patient should be carried occasionally into a room with a different aspect.

A HOUSE DIVIDED AGAINST ITSELF.

CHAPTER XXIX.

'She thinks I am fanciful,' he said.

He was sitting with Lady Markham in the room which was her special sanctuary. She did not call it her boudoir; she was not at all inclined to *boudoir*; but it answered to that retirement in common parlance. Those who wanted to see her alone, to confide in her, as many people did, knocked at the door of this room. It opened with a large window upon the lawn, and looked down through a carefully kept opening upon the sea. Amid all the little luxuries appropriate to my lady's chamber, you could see the biggest ships in the world pass across the gleaming foreground, shut in between two *massifs* of laurel, making a delightful confusion of the great and the small, which was specially pleasant to her. She sat, however, with her back to this pleasant prospect, holding up a screen, to shade her delicate cheek from the bright little fire, which, though April was far advanced, was still thought necessary so near the sea. Claude had thrown himself into another chair in front of the fireplace. No warmth was ever too much for him. There was the usual pathos in his tone, but a faint consciousness of something amusing was in his face.

'Did she?' said Lady Markham with a laugh. 'The little impertinent! But you know, my dear boy, that is what I have always said.'

'Yes—it is quite true. You healthy people, you are always of opinion that one can get over it if one makes the effort; and there is no way of proving the contrary but by dying, which is a strong step.'

'A very strong step—one, I hope, that you will not think of taking. They are both very sincere, my girls, though in a different way. They mean what they say; and yet they do not mean it, Claude. That is, it is quite true; but does not affect their regard for you, which,

I am sure, without implying any deeper feeling, is strong.'

He shook his head a little. 'Dear Lady Markham,' he said, 'you know if I am to marry, I want, above all things, to marry a daughter of yours.'

'Dear boy!' she said, with a look full of tender meaning.

'You have always been so good to me, since ever I can remember. But what am I to do if they—object? Constance—has run away from me, people say: run away—to escape *me*!' His voice took so tragically complaining a tone, that Lady Markham bit her lip and held her screen higher to conceal her smile. Next moment, however, she turned upon him with a perfectly grave and troubled face.

'Dear Claude!' she cried, 'what an injustice to poor Con. I thought I had explained all that to you. You have known all along the painful position I am in with their father, and you know how impulsive she is.—And then, Markham—Alas,' she continued with a sigh, 'my position is very complicated, Claude. Markham is the best son that ever was; but you know I have to pay a great deal for it.'

'Ah!' said Claude; 'Nelly Winterbourne and all that,' with a good many sage nods of his head.

'Not only Nelly Winterbourne—there is no harm in her, that I know—but he has a great influence with the girls. It was he who put it into Constance' head to go to her father. I am quite sure it was. He put it before her that it was her duty.'

'O—oh!' Claude made this very English comment with the doubtful tone which it expresses; and added, 'Her duty!' with a very unconvinced air.

'He did so, I know. And she was so fond of adventure and change. I agreed with him partly afterwards that it was the best thing that could happen to her. She is finding out by experience what banishment from society and from all that makes life pleasant, is. I have no doubt she will come back—in a very different frame of mind.'

Claude did not respond, as perhaps Lady Markham expected him to do. He sat and dangled his leg before the fire, not looking at her. After some time, he said in a reflective way: 'Whoever I marry, she will have to resign herself to banishment, as you call it—that has been always understood. A warm climate in winter—and to be ready to start at any moment.'

'That is always understood—till you get stronger,' said Lady Markham in the gentlest tone. 'But you know I have always expected that you would get stronger. Remember, you have been kept at home all this year—and you are better; at all events, you have not suffered.'

'Had I been sent away, Constance would have remained at home,' he said. 'I am not speaking out of irritation, but only to understand it fully. It is not as if I were finding fault with Constance; but you see for yourself she could not stand me all the year round. A fellow who has always to be thinking about the thermometer is trying.'

'My dear boy,' said Lady Markham, 'everything is trying. The thermometer is much less offensive than most things that men care for. Girls are brought up in that fastidious way; you all like them to be so, and to think they have refined tastes, and so forth; and then you are surprised when you find they have a little difficulty—Constance was only fanciful, that was all—impatient.'

'Fanciful,' he repeated. 'That was what the little one said. I wish she were fanciful, and not so horribly well and strong.'

'My dear Claude,' said Lady Markham quickly, 'you would not like that at all! A delicate wife is the most dreadful thing—one that you would always have to be considering; who could not perhaps go to the places that suited you; who would not be able to go out with you when you wanted her. I don't insist upon a daughter of mine: but not that, not that, for your own sake, my dear boy!'

'I believe you are right,' he said with a look of conviction. 'Then I suppose the only thing to be done is to wait for a little and see how things turn out. There is no hurry about it, you know.'

'Oh, no hurry!' she said with uneasy assent. 'That is, if you are not in a hurry,' she added after a pause.

'No, I don't think so. I am rather enjoying myself, I think. It always does one good,' he said, getting up slowly, 'to come and have it out with you.'

Lady Markham said 'Dear boy!' once more, and gave him her hand, which he kissed; and then his audience was over. He went away; and she turned round to her writing-table to the inevitable correspondence. There was a little cloud upon her forehead so long as she was alone; but when another knock came at the door it cleared by magic as she said 'Come in.' This time it was Sir Thomas who appeared. He was a tall man, with gray hair, and had the air of being very carefully brushed and dressed. He came in, and seated himself where Claude had been, but pushed back the chair from the fire.

'Don't you think,' he said, 'that you keep your room a little too warm?'

'Claude complained that it was cold—it is difficult to please everybody.'

'Oh, Claude—I have come to speak to you, dear Lady Markham, on a very different subject. I was talking to Frances last night.'

'So I perceived. And what do you think of my little girl?'

'You know,' he said with some solemnity, 'the hopes I have always entertained that some time or other our dear Waring might be brought among us once more.'

'I have always told you,' said Lady Markham, 'that no difficulties should be raised by me.'

'You were always everything that is good and kind,' said Sir Thomas. 'I was talking to his dear little daughter last night. She reminds me very much of Waring, Lady Markham.'

'That is odd; for everybody tells me—and indeed I can see it myself—that she is like me.'

'She is very like you; still, she reminds me of her father more than I can say. I do

think we have in her the instrument—the very instrument that is wanted. If he is ever to be brought back again—'

'Which I doubt,' she said, shaking her head.

'Don't let us doubt. With perseverance, everything is to be hoped; and here we have in our very hands what I have always looked for—some one devoted to him and very fond of you.'

'Is she very fond of me?' said Lady Markham. Her face softened—a little moisture crept into her eyes. 'Ah, Sir Thomas, I wonder if that is true. She was very much moved by the idea of her mother—a relation she had never known. She expected I don't know what, but more, I am sure, than she has found in me.—Oh, don't say anything. I am scarcely surprised; I am not at all displeased. To come with your heart full of an ideal, and to find an ordinary woman—a woman in society!' The moisture enlarged in Lady Markham's eyes, not tears, but yet a liquid mist that gave them pathos. She shook her head, looking at him with a smile.

'We need not argue the question,' said Sir Thomas; 'for I know she is very fond of you. You should have heard her stop me, when she thought I was going to criticise you. Of course, had she known me better, she would have known how impossible that was.'

Lady Markham did not say 'Dear Sir Thomas!' as she had said 'Dear boy!' but her look was the same as that which she had turned upon Claude. She was in no doubt as to what his account of her would be.

'She can persuade him, if anybody can,' he said. 'I think I shall go and see him as soon as I can get away—if you do not object. To bring our dear Waring back, to see you two together again, who have always been the objects of my warmest admiration—'

'You are too kind. You have always had a higher opinion of me than I deserve,' she said. 'One can only be grateful. One cannot try to persuade you that you are mistaken. As for me—husband'—there was the slightest momentary pause before she said the name—'I fear you will never get him to think so well of me as you do. It is a great misfortune; but still it sometimes happens that other people think more of a woman than—her very own.'

'You must not say that. Waring adored you.'

She shook her head again. 'He had a great admiration,' she said, 'for a woman to whom he gave my name. But he discovered that it was a mistake; and for me in my own person he had no particular feeling. Think a little whether you are doing wisely. If you should succeed in bringing us two together again—'

'What then?'

She did not say any more: her face grew pale—paled, it were better to say, as by a sudden touch or breath. When such a tie as marriage is severed, if by death, if by any other separation, it is not a light thing to renew it again. The thought of that possibility—which yet was not a possibility—suddenly realised, sent the blood back to Lady Markham's heart. It was not that she was unforgiving, or even that she had not a certain remainder of love for her husband. But to resume those habits of close companionship after so many years—to give up her own

individuality, in part at least, and live a dual life—this thought startled her. She had said that she would put no difficulties in the way. But then she had not thought of all that was involved.

The next visitor who interrupted her retirement came in without the preliminary of knocking. It was Markham who thus made his appearance, presenting himself to the full daylight in his light clothes and colourless aspect; not very well dressed, a complete contrast to the beautiful if sickly youth of her first visitor, and the size and vigour of the other. Markham had neither beauty nor vigour. Even the usual keenness and humorous look had gone out of his face. He held a letter in his hand. He did not, like the others, put himself into the chair where Lady Markham, herself turned from the light, could mark every change of countenance in her interlocutor. He went up to the fire with the ease of the master of the house, and stood in front of it as an Englishman loves to do. But he was not quite at his ease on this occasion. He said nothing until he had assumed this place, and even stood for a whole minute or more silent before he found his voice. Lady Markham had turned her chair towards him at once, and sat with her head raised and expectant, watching him. For with Markham, never very reticent of his words, this prolonged pause seemed to mean that there was something important to say. But it did not appear when he spoke. He put the forefinger of one hand on the letter he held in the other. 'I have heard from the Winterbourns,' he said. 'They are coming tomorrow.'

Lady Markham made the usual little exclamation 'Oh!'—faintly breathed with the slightest catch, as if it might have meant more. Then, after a moment: 'Very well, Markham: they can have their usual rooms,' she said.

Again there was a little pause. Then: 'He is not very well,' said Markham.

'Oh! that is a pity,' she replied with very little concern.

'That's not strong enough. I believe he is rather ill. They are leaving the Crosslands sooner than they intended because there's no doctor there.'

'Then it is a good thing,' said Lady Markham, 'that there is such a good doctor here. We are so healthy a party, he is quite thrown away on us.'

Markham did not find that his mother divined what he wanted to say with her usual promptitude. 'I am afraid Winterbourn is in a bad way,' he said at length, moving uneasily from one foot to the other, and avoiding her eye.

'Do you mean that there is anything serious—dangerous?—Good heavens!' cried Lady Markham, now fully roused, 'I hope she is not going to bring that man to die here.'

'That's just what I have been thinking. It would be decidedly awkward.'

'Oh, awkward is not the word,' cried Lady Markham, with a sudden vision of all the inconveniences: her pretty house turned upside down—though it was not hers, but his—a stop put to everything—the flight of her guests in every direction—herself detained and separated from all her social duties. 'You take it very coolly,'

she said. 'You must write and say it is impossible in the circumstances.'

'Can't,' said Markham. 'They must have started by this time. They are to travel slowly—to husband his strength.'

'To husband—!—Telegraph, then!—Good heavens, Markham, don't you see what a dreadful nuisance—how impossible in every point of view.'

'Come,' he said, with a return of his more familiar tone. 'There's no evidence that he means to die here. I daresay he won't, if he can help it, poor beggar! The telegraph is as impossible as the post. We are in for it, mammy. Let's hope he'll pull through.'

'And if he doesn't, Markham!'

'That will be—more awkward still,' he said. Markham was not himself: he shuffled from one foot to another, and looked straight before him, never glancing aside with those keen looks of understanding which made his insignificant countenance interesting. His mother was, what mothers too seldom are, his most intimate friend; but he did not meet her eye. His hands were thrust into his pockets, his shoulders up to his ears. At last a faint and doubtful gleam broke over his face. He burst into a sudden chuckle, one of those hoarse brief notes of laughter which were peculiar to him. 'By Jove! it would be poetic justice,' he said.

Lady Markham showed no inclination to laughter. 'Is there nothing we can do?' she cried.

'Think of something else,' said Markham with a sudden recovery. 'I always find that the best thing to do—for the moment.—What was Claude saying to you—and t'other man?'

'Claude! I don't know what he was saying. News like this is enough to drive everything else out of one's head.—He is wavering between Con and Frances.'

'Mother, I told you. Frances will have nothing to say to him.'

'Frances—will obey the leading of events, I hope.'

'Poor little Fan! I don't think she will, though. That child has a great deal in her. She shows her parentage.'

'Sir Thomas says she reminds him much of her—father,' Lady Markham said with a faint smile.

'There is something of Waring too,' said her son, nodding his head.

This seemed to jar upon the mother. She changed colour a little; and then added, her smile growing more constrained: 'He thinks she may be a powerful instrument in—changing his mind—bringing him, after all these years, back'—here she paused a little, as if seeking for a phrase; then added, her smile growing less and less pleasant—'to his duty.'

Then Markham for the first time looked at her. He had been paying but partial attention up to this moment, his mind being engrossed with difficulties of his own; but he awoke at this suggestion, and looked at her with something of his usual keenness, but with a gravity not at all usual. And she met his eye with an awakening in hers which was still more remarkable. For a moment they thus contemplated each other, not like mother and son, nor like

the dear and close friends they were, but like two antagonists suddenly perceiving, on either side, the coming conflict. For almost the first time there woke in Lady Markham's mind a consciousness that it was possible her son, who had been always her champion, her defender, her companion, might wish her out of his way. She looked at him with a rising colour, with all her nerves thrilling, and her whole soul on the alert for his next words. These were words which he would have preferred not to speak; but they seemed to be forced from his lips against his will, though even as he said them he explained to himself that they had been in his mind to say before he knew—before the dilemma that might occur had seemed possible.

"Yes?" he said. "I understand what he means. I—even I—had been thinking that something of the sort—might be a good thing."

She clasped her hands with a quick passionate movement. "Has it come to this—in a moment—without warning?" she cried.

(*To be continued.*)

SOME FURTHER USES OF OIL ON TROUBLED WATERS.

THE use of oil to smooth the surface of raging seas has on more than one occasion been discussed in this *Journal*. The subject is, however, far from being exhausted. The increasing favour with which practical mariners regard the practice, which can only be looked upon as in its infancy, has caused a considerable number of appliances for the distribution of the oil to be invented. Two of these, of American origin, we believe, are deserving of mention. Those of our readers who read our article on the subject in our issue of January 31st may remember that, the oil being distributed from the ship, there was some difficulty, indeed an apparent impossibility, in getting it well to windward, and that this could only be done when the vessel was either at anchor, or lying to, or running before a gale. The object of the two appliances to which we have referred may be said, roughly, to be the distribution of the oil in any direction without regard to the wind. The first one is specially intended to spread the oil between two ships which wish to communicate with one another in bad weather. The apparatus consists of a mortar and a few shells filled with oil, which are fired to various points on the water between the two vessels, and burst, thus allowing the oil to spread. Should the distance between the two ships be so great that it cannot be covered with oil, the oil from each of the shells would nevertheless be of considerable use, forming little havens, into which the boat could go, and not only allow the men to rest and recover their strength for further battle with the wind and waves, but also furnish them with a place of comparative security during any exceptionally heavy bursts of the tempest. Under certain circumstances, this apparatus might be used for insuring the safety of the vessel itself. For instance, when about to pass through a dangerous and narrow channel in bad weather with wind against tide, a few oil-charged shells might

be fired ahead of the vessel with considerable advantage.

The second appliance is specially intended to distribute oil on the sea between a stranded vessel and the shore in those cases where the vessel has no oil on board, and communication by boat is, with the assistance of the oil, practicable. It consists of a mortar and some hundred yards of fine light hose, to one end of which is attached a heavy iron cylinder, so shaped that it can be fired from the mortar. This apparatus is worked as follows: On a ship going aground near the shore, the cylinder is fired as near to it as possible. The cylinder of course sinks, and acts as an anchor to the hose, through which oil is pumped from the shore. The oil rises near the vessel, and being blown towards the shore—in most cases, vessels are wrecked on a lee-shore—forms a track of fairly smooth water for the boats to traverse. In cases where the whole volume of water rushes along and breaks, the oil has little or no effect, and consequently this apparatus would then be useless; but in ordinary broken water, the appliance would no doubt be of considerable service. Ships at anchor would find such an apparatus of great use in bad weather, as it would enable them to get the oil well to windward. The alternative thing to do, as described in our former article, would be to fasten a bag of oil by a light line to the anchor, over which it would float and intercept the broken waves.

It is not generally known that the sponge-fishers of Florida make considerable use of oil for the purpose of calming the surface of the water. During the greater part of the year the slight ripple on the water is easily overcome by that time-honoured device, the water-telescope. By the aid of that instrument, the fishers easily discern the sponges, and hook them up from the bottom. But it sometimes happens in the spring that the roughness of the sea prevents the handling of both hooks and telescopes. Then the sponger throws a spoonful of oil upon the waves, which produces a calm about his boat as long as he cares to drift about with it. The oil preferred by the spongers for this purpose is obtained from the liver of the "nurse" shark. So effective is this oil considered, that as much as a dollar a gallon is paid for it. This species of shark abounds in the vicinity of the Florida reefs, and is very easily captured.

WALTER DREW.

IN FOUR CHAPTERS.—CONCLUSION.

IT was breakfast-time once more at Brierleigh Rectory, some four weeks after my return from London. The windows were open; but the sunshine had not yet pierced the thin white haze that hung over the lawn and the fields beyond, giving promise of a sultry day. My father and Aunt Marjory sat in their accustomed places; Tom and Gip, too, were making their usual pretence of a nap on the hearth. Thus far, the grouping was the same as on the morning when I first introduced the reader to the rectory parlour. But other faces and forms now sat around the table, and other voices enlivened the morning meal. Colonel Stanton, his daughter,

and Miss Winter had arrived the day before ; and Walter Drew had already been staying with us a fortnight. The conversation was sprightly and pleasant. I alone felt inclined to be silent, my mind being occupied with mixed reflections on all that had happened since that other morning when Colonel Stanton's letter had reached us.

My father looked ten years younger as he chatted delightedly with the colonel and Miss Stanton. It was evident—plainly evident—that his warm heart was flushed to the full with all that his old school comrade's presence could suggest.

To bring my story up to the day on which this chapter opens, I have to mention that I called at Elmdrove Manor, along with my father, the week after my return to Warwickshire, in order to make the promised amende for my apparent neglect to wait on the colonel when in London. I dreaded the ordeal of meeting Alice Stanton, but then the task was one of simple duty. The meeting proved to the full as trying as I had anticipated. Both Alice and Miss Winter recognised me the moment of presentation, Miss Stanton being much overcome with emotion. The explanation ensuing—the colonel's surprise, gratitude, and kindly interest—the congratulations between him and my father, together with my own contending feelings, formed a passage in my life too painful for more minute description.

When Aunt Marjory came to learn from my father the identity of the fair unknown with Miss Stanton the heiress, her surprise knew no bounds ; and the knowledge led to many hints and one-sided pleasantries far from welcome to me in the frame of mind I then was. I had, it is true, resigned myself to the idea of a union between Walter and Alice—of which my worthy aunt knew nothing ; but the wound was still tender, and her well-meant badinage pained me.

When, on my return to Briarleigh, I had told my aunt of the new friend I had made, and of the invitation I had given him to come and spend a few weeks in our quiet retreat, she shed tears of vexation, and uttered words of upbraiding of which I had never suspected her capable. But then the name—Walter Drew—had had such a lifelong penance attached to it in her little world of action and affection, that I ought not to have been surprised at its effects upon her. On her learning, however, that Walter was Colonel Stanton's nephew—the artist he had so half-hopefully referred to in that ever-memorable letter—her objections to the visit were less persistently urged, although against the visitor himself her prejudices remained as strong as ever, up to the day when he arrived in the dogcart with the cream-coloured pony, which I had myself driven over to the station to meet him.

My aunt's frigid courtesy of reception was instantly thawed into a smile and a hearty shake of the hand, under the influence of the fine natural sunlight of Walter's face. The terriers Tom and Gip vied in unsolicited attentions to him—the best credentials the visitor could have presented to Marjory. Before many days, he had completely ousted me from my

position of cavalier in attendance. He accompanied her in her walks, tended her flowers, made spirited sketches of the dogs, came and went at her bidding—in fact, doing all with the unfailing good-humour, dexterous tact, and broad geniality which characterised him so essentially.

I need hardly say that the account of my London adventure in meeting young Drew and the disclosure of his relationship to Colonel Stanton were received by my father from the first in an altogether different manner from that of Aunt Marjory. He was unaffectedly delighted at the prospect of meeting the son of that old friend for whose sake he had suffered so much. It was touching, too, to watch the fatherly welcome he gave Walter. They spent many hours together in the little out-of-doors studio, and talked of art as only a young expert and an old enthusiast can. When one saw the two painters together in earnest conversation, the dissimilarity of their characters and the disparity of their years seemed to vanish in the air of mutual respect and common sympathies which surrounded them. My father, of course, needed no caution from me to avoid any reference to those circumstances which attended the close of his connection with the elder Drew ; his own instincts sufficed.

That happy breakfast hour thus saw the reunion of many long-parted threads of social interest and affection. No wonder I was meditative and observant, rather than inclined to share very largely the conversation going on around. Nevertheless, there was still a lingering shade of melancholy in the contemplation of the happiness of that circle ! I observed with a sigh that Miss Stanton talked to Drew with perfect freedom, while Miss Winter, although listening eagerly, addressed him but seldom. Had I possessed the perspicacity of a disinterested onlooker, I might have read these signs differently ; but love, like jealousy, is blind. The most striking and interesting phase of the little panorama was after all, perhaps, the complete manner in which Drew's erratic, unconventional style blended fittingly and harmoniously with the chastened high-bred tone of the company. It was bizarre, and yet not bizarre ; for his instincts enabled him, without effort or consciousness, to adapt himself at all turns to the prevailing feeling. I now felt sure that his lost hold of the world's ways had been regained, and that his path henceforth would be easy ; and I may add that I formed this conclusion with a high sense of satisfaction. I never loved Drew better than at the moment when I anticipated he was to take from me that which was dearer to me than life.

Breakfast ended, my father asked Miss Marjory for his letters as usual. The ladies sought their rooms in order to prepare for a quiet day in and about the rectory grounds. The colonel remained with the *Standard* in his hands, awaiting on to the lawn to enjoy the luxury of a cigar.

The haze had now almost disappeared, and the sun already gave a foretaste of its powers. Tom and Gip walked lazily along with extended tongues, as Drew and I sauntered round the shadiest side of the garden. We spoke little,

my mind being full of the incidents and conversation of the morning; while my companion was either similarly preoccupied or in the happy condition of having nothing to think about but his cigar. We looked over the quickset hedge at the rough hardy fellows busy in the cornfields. It is probable I thought of them and their work from my knowledge of both from childhood; it is equally probable that Walter saw only the colouring and grouping from an artistic point of view. We passed on at anyrate without exchange of confidence until we came to the entrance gate of the grounds, when a chaise drove rapidly through, its occupant being an elderly, thin-faced man clad in black, who saluted us in passing. Drew saluted the stranger in return.

'Who is he?' I asked.

'My uncle's lawyer, Mr Greig, by all that's mysterious!' he exclaimed, but with a smile that belied the mystery so far as he was concerned. 'What can have happened to bring old parchment here, above all places? There's something big on the board, that's certain.' And Drew gave a droll laugh that suggested an *arrière pensée*.

We continued our stroll along the southern wall till we reached my father's novel studio. I tried the door in a purposeless way. It was locked, and I knew my father always carried the key in his pocket; so we passed on, smoking indolently, till Drew suddenly stopping and facing me, said: 'Do you know, Charlton, I think it a most singular thing that your father and mine should have been such intimate friends as they appear to have been, and that the colonel should also be an old friend of your father's, whilst it was only by the chapter of accidents that you and I came together.'

'The reason seems simple enough,' I replied, smiling at his unwonted earnestness. 'My father was unaware that the colonel had married your aunt, if indeed he even knew of her existence. As for yourself, he was under the impression that you had died when a child.'

'Yes, yes; the reason is plain,' answered Walter. 'But—don't you think, now—the whole thing is like—like a leaf out of a romance, you know; strange, queer-like—eh?' His round jocund face had the odd, half-whimsical look which was its only expression for sentiment. He knocked the ashes from the end of his cigar, then eyed me from behind this mask till I could resist no longer, and laughed outright.

'Hang it, old fellow,' he said, 'you won't let me be serious when I would; but for all your laughing, there is something uncommonly queer in it all. Perhaps you wanted to enjoy a good joke or two at my expense; still, I can't help thinking, *mon ami*, that it was too bad of you not to let me know from the first that your good kind soul of a father was the friend of mine.'

What could I say? Had he learned anything of the history of that friendship? These thoughts were swiftly interrupted by Drew, who had again assumed his mask.

'Look here, John,' said he in a voice comically plaintive; 'you have not been quite frank with me on another matter. You saved my cousin's life; yet, when you came to know it

was my cousin, you were mum on the subject. Now, I call that unfair.' He paused, as though to give me time to speak; but I dared not trust myself to reply. Had he looked ten times as 'serious,' I could not even have smiled. 'Ah, you know it is,' he continued. 'Well, I can forgive you for that; you were too genuine to chatter about what you had done. But while I may even admire your silence to me, I can't for the life of me see why you should be so stand-offish with my cousin Alice.'

'Drew!'

'Nay, John, I will speak. You know how much I prize your friendship, and can a real friend be blind? I know you love my cousin, and who has a better right? Why not, then, my dear fellow, make her and yourself happy by saying so?'

As he spoke, a slight vertigo seized me; I saw the trees and Tom and Gip following one another in a circle; the ground under me reeled curiously, and the figure of my friend expanded and contracted like a reflection in a moving mirror.

'Miss Alice!' I at last contrived to say. 'Why, I thought you—'

'Thought I was in love with her? There—you drop another secret, which I was shrewd enough to guess before. You are the prince of good fellows; but, don't you know—if I did love Alice, Alice did not love me. I can't make a speech like a fellow in a play. All I want to say is this—I can't have Alice, if I would; and you may, if you but ask.' And Drew, with the wistful look in his hazel eyes which I have remarked as a peculiarity of his when seized with emotion, took my hand and pressed it warmly. Then, with that singular elasticity of temperament which no one could credit unless in contact with him for some time, he relit his cigar, passed his arm through mine with the air and carriage of a man without a care, while we resumed our walk.

We had not gone far, when the new train of thoughts induced by the above incident was interrupted by a servant approaching us saying: 'If you please, Mr Charlton wishes to speak to you both in his study.'

I marvelled somewhat at this formal summons; but Drew seemed to think it the most natural thing in the world, as I could tell by his instantly hastened stride. We reached the house together and entered the study. There, seated at the table, with a variety of documents between them, were Mr Greig the lawyer—who had arrived in the chaise—Colonel Stanton, and my father. The lawyer and the colonel appeared to have been in pleasant converse, for, as we entered, their faces were still wreathed in smiles. My father, on the other hand, looked serious, if not a little agitated. The smile disappeared from the lawyer's face as though it had been snuffed out, but that on the old warrior's lingered into a kind of pleasing twilight. The former, who was evidently president of this conclave, waved to Walter and me to be seated.

'We have sent for you two young gentlemen,' he said in a professional tone, 'to make you jointly acquainted with matters which Colonel Stanton, my client, and Mr Charlton have already discussed. The late Mrs Stanton,

whose agent I had the honour to be, died possessed of a considerable fortune in her own right. This she naturally left to the free disposal of her husband, and so far the matter might have rested there. But Mrs Stanton took a strong interest in the career of her brother's only child—yourself, Mr Drew—and expressed a wish that Colonel Stanton should treat you as a son, and assist you out of her estate in any way, and to such extent as circumstances might suggest and warrant. That estate has remained untouched in my hands up to this time. Now, there were circumstances in the history of the late Mr Drew, which, had Mrs Stanton been aware of, would have caused her to dispose of a large portion of her means during her lifetime, seeing that he died without having the opportunity of—of putting his affairs straight himself. Colonel Stanton is quite certain on this point; and he has desired me to arrange, out of his wife's estate, a settlement in full of certain liabilities under which he has recently learned the late Mr Drew lay with respect to his friend the Rev. Mr Charlton. We have been altogether unable to obtain Mr Charlton's consent to accept any quittance beyond the strictly clear claim which pertains to certain bills he indorsed for Mr Drew, and for which he became liable on—on his friend's death. The colonel will now explain his intentions with respect to the remainder of the property.' And Mr Greig laid himself back in his chair with the air of a man who had discharged a duty to his own satisfaction.

'The fact is, young gentlemen,' said the colonel with military brevity, 'Mr Greig shall divide it equally, and place the sums to your respective credits.'

I was mute; nor can that be matter of surprise. I looked first at one, then the other, as though to read in their faces whether I had heard aright. The colonel and his lawyer conversed aside; my father sat in a kind of stupor; Drew looked happy enough for all the party put together.

'You will see, my dear Charlton,' at last said the colonel, taking my father's hand in his, 'that although I am bound to respect your scruples—over-refined as I consider them—neither Walter nor myself, nor, I may add, my daughter, could possibly rest under the reflection that your son had been practically disinherited by us. That hardship we are by this arrangement enabled to avoid. But what, except your own conscience, can ever repay you, my dear old friend, for the noble spirit in which you have borne this terrible burden so long!'

'God bless you, Charles!' was all my father could say, as, after wringing the colonel's hand, he rose to leave the room. Walter took his arm and led him gently out, and my heart went out towards my friend as I observed this simple action.

'I am delighted, John,' said the colonel, kindly addressing me, 'that you and Walter are such good friends. Your influence for good with him has already been immense. The friendship of a steady earnest character like yourself was really what he wanted to make him a little more thoughtful and amenable to ordinary social rules. I have great hopes of him yet. He is really an excellent fellow at bottom. You will be glad to

hear, that when I told him, only a week ago, when he was over at the Manor, the sad circumstances of his father's connection with yours—which, by the way, I only gathered by accident from an old friend of my own and of your father—he was beside himself with grief, and vowed to make over his own income for the redemption of his father's name. I then told him—what I had from prudence hitherto concealed—that I considered him my wife's heir. He absolutely refused to touch a penny unless your father were first reimbursed. That was what I longed to hear, and what I am proud he was able to say.'

Thus had I two tokens given me in one day of Walter Drew's practical adoption of my father's formula of 'honour and friendship,' and thus had events happily compensated him who held it as a canon of conduct.

A laughing party stood in the porch of the rectory. The colonel gallantly offered his arm to Aunt Marjory, who, blushing and smiling, was led off down the garden path. Walter paired off with Miss Winter; my father and Mr Greig, who was to remain to dinner, trotted off in the direction of the studio; and I was left alone for the first time in my life with Miss Stanton. Her face was turned towards me, and I observed a warm blush and timid downward glance as she placed her tiny gloved hand upon my proffered arm.

Our friends were nowhere within sight. We followed the direction they had taken so far as we had been able to keep them in view, and then, purposefully, I chose a path the least likely to lead us to them. The timidity of my companion's step made me conscious that she had divined my thoughts, and I hastened to converse as freely as my own agitation would allow on any subject that had the consideration to present itself. The attempt was a very unsatisfactory one, so much so, that by the time we had reached the honeysuckle arbour to which my steps had led, Alice nervously expressed a wish to turn in search of her father. It is too late, in this my last chapter, to record the details of what there and then transpired. Alice could probably narrate what occurred better than I can; but I may here mention, that before our return, 'the last of all that band,' to dress for dinner, we did so as affianced lovers, awaiting only the parental consent and benediction.

The dinner passed pleasantly. I was supremely happy, and thought every one else ridiculously dull in comparison, although for that matter their looks belied the impeachment of dullness. How it made my heart bound with gratitude to witness the smile, free from care, that sat on my father's venerable face, and to listen to his genial laugh, to the merry classical quips with which he entertained the colonel, or the graceful badinage with which he amused my aunt and her young friends. No more bitter wearing cares for him! Alice sat in silence, the silence of profound happiness. Walter's face shed a brighter lustre of smiles than ever. My good Aunt Marjory was probably the gayest of the party, and quizzed me with her brown eyes as often as she decently could; but, happily, I was now invulnerable.

That evening I sought an interview with Colonel Stanton, who gave his hearty consent to my union with his daughter. He said he could desire no better future for his child than to be the wife of one who had been an affectionate son and a magnanimous friend. He referred gratefully also to my earliest claim upon his daughter's interest. It thus came to pass that Aunt Marjory's prophecy was fulfilled, for, six months after that eventful day, Alice and I were married at Brierleigh Church. I must mention that on the same day and in the same church, Walter Drew led Miss Winter to the altar. His engagement had not been of long standing, but he insisted on the 'events' coming off together. It only remains to add that Walter and I remain fast friends, and that I am proud of his rapidly growing fame as an artist. At the colonel's express wish, my own professional career was nipped in the bud, and my ambition directed towards the field of politics.

THE MONTH: SCIENCE AND ARTS.

THE Select Committee of the House of Commons on Irish Industries obtained some valuable information the other day from the evidence of Professor Howitz on the subject of tree-planting. This gentleman is superintendent of the Forest Conservatory in Copenhagen, and for twelve years held a somewhat similar post in Australia, so that he has had much practical experience of the subject upon which he spoke. He said that Ireland is so favourably situated that it is possible to grow there almost all necessary timbers. The remains of oak found buried in the bog-earth in such abundance show that one description at least should flourish there well. Osiers, too, will grow in Ireland; and if cultivated, would be ready for market in three years. Basket-making from osiers is easily learned; and big industries, such as have sprung up in France, might be established by our Irish neighbours. In one district of the Garonne, in consequence of extensive tree-planting, the population had increased by immigration in one generation from twenty-five thousand to five millions. From the trees, a prosperous people were now drawing their incomes, or rather from the industries which had arisen in firewood, charcoal, resin, tar, bark, &c. The Professor recommended that five million acres of Irish land should be planted at a cost of about twenty millions sterling, and he believes that the investment would pay well.

Professor Milne of Japan has been making further and very original experiments in that country, in order to study the effects of earthquake wave-movement in different soils. As he could not command earthquakes to come at his bidding, even in that earthquake-favoured land, he endeavoured to produce them artificially. This he did by subterranean explosions of dynamite, and by causing heavy weights to fall from a great height. The results recorded are most interesting, but far too complex in their nature to be detailed here. It is illustrative of the enlightenment of the Japanese administration that such startling experiments were not only permitted but encouraged.

In the course of Professor Milne's researches, he paid a visit to the Kurile Islands, which lie between Japan and Siberia. His object was to study the volcanoes there; but he incidentally gives us some information, which, if it came from a less authentic source, would be scouted as being incredible. It relates to the abundance of fish, principally salmon and salmon-trout, found round the coasts of these islands. 'They exist,' he says, 'in such numbers during the summer and autumn season, that their fins, sticking out of the water near the entrances to the rivers, look like tangled masses of kelp; while up the rivers it is but little exaggeration to say that some of the pools are mixtures of fish and water. With a rifle-bullet you may pierce four or five at a single shot. The shallows are often covered with dead fish, which in their struggle for existence have become so weak, that having once run themselves ashore, they are unable to return to deeper water. A single haul of a small seine-net upon the beach brought to land a huge heap of fish varying in weight from four to twenty pounds, the number of which we roughly estimated at five thousand.'

In the June number of the *Journal of the Royal Microscopical Society* there is a paper by Mr Edward Wethered which contains some new suggestions as to that much-disputed question, the origin of our coal-fields. Mr Wethered has for some time been busily engaged in making microscopical examinations of coal from Cannock Chase; and from these labours he is led to the conclusion, that coal was originally of aquatic habit, 'growing in a manner similar to modern bogs, but of much larger extent.' He believes that the fossil tree trunks found so often in collieries grew in the coal, but took no part in the formation of the coal.

M. Alluard has lately pointed out an instance in which the wind has helped in the local fertilisation of the soil. The valley of Limagne, in Auvergne, owes its marvellous fertility to the showers of volcanic ash which are carried from the Dômes during south and south-west winds. This ash contains lime, phosphoric acid, and potash, and is therefore highly beneficial to the soil. M. Alluard, from observations on the Puy-de-Dôme, estimates the annual deposit at about twelve ounces avoirdupois per square yard.

The Hydrographical bureau at Washington have published some results of a series of observations carried out by them with reference to the length, depth, and duration of ocean-waves. In the Atlantic storms, the waves extend to a length of five to six hundred feet, the largest observed being half a mile long. As to height, forty-eight feet seems to be the extreme limit; while thirty feet may be named as a fair average. These measurements refer to ocean-waves pure and simple, and do not take into consideration exceptional occurrences, such as earthquake-waves.

Lieutenant Chisholm-Battens' recent lecture before the United Service Institution on 'Electricity applied to Naval Purposes,' dealt with a subject of universal interest. However much the electric light may have proved impossible of application generally, it must be admitted that it has scored a success at sea. Many of the war-vessels, ocean-going passenger steamers, and

merchantmen, are now well lighted by electricity, without undue heat, and without danger from fire, which is inseparable from the use of candles and lamps. Moreover, the new light for shipboard is cheaper than the older illuminants; for the principal item of cost in electric installations—the motive-power to drive the dynamo-machines—is already established in the case of steamers for driving the ship. But beyond the mere lighting of vessels, there are many other uses for electricity on our ships of war. Among these, we may name the necessary search-light, which did such good service at Suakin; the firing of broadsides at any given moment, and even when the ship is rolling heavily; the firing of spar-torpedoes; and the steering, propelling, and firing of torpedoes of the fish-pattern. Lastly, we may name the firing of submarine mines. It will be thus seen that electricity plays an important role in modern warfare, and its introduction marks an era in naval history as important as that of armoured plated ships.

A correspondent of the *Times* points out very sensibly that the inclusion of the address in the sixpenny telegrams as matter that must be paid for is likely to have one salutary effect at least, in causing people to number their houses instead of giving them absurd names. The dwellers in suburban villas are the worst offenders in this respect. It may be gratifying to them to name their houses 'The Hollies,' 'The Ivies,' 'Torrano Villa,' &c.; but independently of the trouble caused to letter deliverers, it is a dreadful task to strangers who wish to find one of a row of houses, and who—possibly on a dark night—have to grope their way from end to end of a long road before the particular domicile is discovered. A tax on houses designated otherwise than by numbers would have a salutary effect.

The introduction of American fish into British waters has lately formed the subject of much correspondence in the *Times*, and it is curious to note the differences of opinion expressed by different writers. A, for instance, advocates the introduction of the cat-fish—first made familiar to Londoners through the medium of the Fisheries Exhibition; the next week, B protests against this 'forbidding, ferocious, uneatable, and all-devouring fish' being welcomed here, which, he says, as far as he knows, is eaten by no white man willingly. That the appearance of the fish is forbidding, is perfectly true, but we suspect that the rest of the strictures passed by B on the cat-fish are due to prejudice. For many months past the fish has been sold in the Farrington fish-market, London, and we can speak from personal experience of its very acceptable flavour. We may add that it is sold headless and skinned, so as to disguise it, and that it is called 'ling,' 'Bell-rock salmon,' &c., according to the fancy of the vendor.

The *Gas and Water Review* publishes an interesting paragraph relating to the strange cause of a fire which occurred quite recently at Manchester. A girl at a restaurant going under some stairs with a lighted candle, a gas explosion took place and set fire to some woodwork. The outbreak was soon quelled with a few buckets of water, when it was found that the gas escape was caused by rats gnawing through the com-

position pipe. The superintendent of the fire brigade spoke of several instances which had come under his notice where fires had been caused in this way by rats. He had noticed that the rats always selected a bend or angle of the gas-pipe for their mischievous labours, and gave it as his opinion that they did so to get at the water lodging in such situations, and which they would hear bubbling in the pipe.

Twelve months ago, we gave some account of the Quicksilver Wave Amalgamator for the treatment of quartz reef and collection of its precious contents. We now learn that it has come into use in many auriferous fields, and that the saving of gold accomplished by it is astonishing. Under ordinary systems of reduction, it is calculated that for every ounce of gold won, an ounce is lost in particles too small to be retained. The new apparatus claims to save eighty-five to ninety per cent. of the gold present in the ore, and it stands to reason that if this be the case, many a mine which is struggling for bare existence would under the new conditions become a valuable property. The loss of gold for want of efficient apparatus in California alone during the past thirty-three years is stated at two hundred and fifty millions sterling.

Messrs Yarrow, the celebrated builders of boats for service on the Nile, have adopted a very curious but efficient method of sounding the treacherous waters of that river for obstructing rocks. The boat is provided with two poles, which extend for fifty feet on either side of the prow of the vessel. At the end of each pole hangs vertically an iron rod, the length of which is so calculated that the end under water lies about one foot deeper than the keel of the boat. These rods are in connection with suitable gearing, so arranged that directly a rock, sandbank, or any other subaqueous obstruction is touched by either of them, the whistle is caused to sound a warning of the danger ahead. It is at the same time possible to know on which side of the boat the danger may be looked for, and avoided.

It is to be hoped that the recent fatal leap from the New York and Brooklyn Bridge will deter others from attempting feats of this foolhardy nature. The only chance of success is that a body falling from a height into water should assume the shape of a wedge, so as to cut into the fluid like the cut-water of a boat. For this reason, the experienced diver, even if he be only a few feet above the surface of the water, will form his arms and hands into a wedge-like point above his head, before making his plunge. In the Brooklyn case, the jumper went feet foremost; but before he touched the water, his body swerved from the perpendicular, and he struck the water sideways. Examination showed that the blow on the surface of the water had fractured the victim's ribs, and ruptured the internal organs.

It has long been deplored by tourists to Niagara Falls that that grand illustration of natural energy is being gradually spoilt by its surroundings. Unsightly structures of various kinds have been allowed to spring up round about, until the natural scenery, the framework of the unique picture, has been almost destroyed. Another grievance is that a visitor to the place,

before he can obtain access to any point from which the falls can be viewed, is subjected to a vexatious toll from some rapacious landowner. All this is now to be done away with. The contiguous lands are about to be purchased by the state, and are to be restored as soon as possible to their pristine condition. The whole region is to be preserved as far as possible in a state of nature, and will be thrown open freely to visitors from all countries.

Mr F. Sargent has chosen for his latest picture, now being exhibited in Bond Street, London, a subject of great interest to most people—'Her Majesty's Drawing-room.' The picture is full of portraits, which, thanks to the wide publication of photographs of celebrities, can be easily recognised as being most admirable likenesses. But this perfection of detail does not detract from the effect of the picture as a whole, the artist having been careful to preserve sufficient breadth of light and shade to prevent such a mistake. In a picture like this, containing more than a hundred portrait studies, it is very difficult to avoid the appearance of the figures having been cut out in paper and pasted in their places on the canvas. Mr Sargent's work is quite free from this defect. His models, too, are not all looking aimlessly out of the picture; many of the best portraits being those in which the faces are turned partially away from the spectator. Apart from its merit as a work of art, a picture such as this has an historical value which should ultimately secure it a place in one of our public picture-galleries.

At Woolwich, there is a certain gun which is fired twice daily, at one o'clock P.M., and again at 9.30 P.M. A sparrow has chosen the axletree box of that gun as a suitable place wherein to make her nest and hatch her young. Her behaviour has been watched with great interest by the gunners in charge, who record that the mother-sparrow, both while sitting on her eggs, and subsequently when covering her little ones, retained her position, as a rule, when the gun was being actually loaded and fired. Two of the brood have since died—presumably from concussion of the brain—one fell a victim to a dog; but the two remaining ones have grown to maturity.

Dr J. H. Stallard has recently exhibited before the San Francisco Microscopical Society a new apparatus called the 'Ether Spray Microtome.' Its use is to cut thin sections of soft tissues suitable for microscope-work, and it accomplishes this in the following manner: The tissue is placed in a zinc box, and is submitted to the action of ether spray until it is frozen into a hard solid mass. A knife sliding over two horizontal glass plates now comes into play, and cuts off the delicate slices required. It should be noticed that the tissue before being cut is soaked in a strong solution of gum. This does not show a crystalline structure when frozen, as would water alone, and the mass can be cut through like cheese. The process is applicable to such delicate organs as lung-tissue, the retina, &c., which are likely to be torn unless very special precautions be observed.

A handsome quarto volume, which is sure to be welcomed by lovers of music, is *The Songs of the North*, published by Field and Tuer,

London. The songs are gathered from the Highlands and Lowlands of Scotland, the editors being Miss A. C. Macleod and Mr Harold Boulton. The music is arranged by Mr Malcolm Lawson. The chief characteristic of the volume as a work of art is, that it contains above twenty illustrations in the shape of original drawings by known artists. Among those who thus contribute to the volume are Sir Noel Paton, E. Burne Jones, J. MacWhirter, George Reid, W. D. Mackay, John Pettie, &c. The songs have been selected with care, and the harmonies are in general pleasing and appropriate.

The cart for which Mr Thomas Briggs, Darwen, Lancashire, was awarded, at the Edinburgh Agricultural Show, the prize offered by the Scottish Society for the Prevention of Cruelty to Animals, was recently tested in Edinburgh. The cart was loaded to the extent of about two tons, and tried on the steep incline from Frederick Street to Queen Street. By the arrangement of the cart, the weight was taken off the horse's back, and the brake being applied simultaneously, the breeching strap was quite loose all the way down the hill. On the return journey, the weight was moved forward on to the horse's back, and assisted its ascent. The trial was very satisfactory, and those who witnessed it were favourably impressed with the value of the invention.

A correspondent brings under our notice a remedy for burns and scalds which he assures us is superior even to Carron oil, namely, a saturated solution of carbonate of soda. The mode of application is to cover the injured part with lint or soft cloth soaked in the solution, and never allowed to become dry. The chief advantage this treatment has over Carron oil is the marked relief in the pain which follows its application; the other advantages being its greater cleanliness and general pleasantness to work with—Carron oil being very disagreeable, and spoiling everything it touches. Again, burns and scalds treated with soda have less tendency to form granulations or 'proud-flesh,' this being kept down by the slight caustic action of the soda.

THE ELEPHANT-TAMER.

IN THREE CHAPTERS.

CHAP. III.—BUX KHÁN'S FATE.

ALTHOUGH it had been supposed that Bux Khán's child had escaped unhurt from the elephant, it soon proved that he had in some way been injured internally. From the day of Shaitán's outbreak and death, the little fellow began to pine away. Every day he grew worse, till it was clear to everybody in the place that he was dying. The only person who did not appear to be aware how serious was the child's condition seemed to be Bux Khán himself. That he was anxious and disturbed was evident, for, for the first time, he began to neglect his duties. He now never left the child day or night. His master tried to induce him to let the kheddah doctor prescribe for the boy; but Bux Khán respectfully but firmly refused. He appeared to have faith in certain nostrums and drugs, which he himself administered to the child. All that Eaton

could do was to excuse him from his duties, so that he might always be with his too surely dying child.

Most of the people in the kheddah sympathised sincerely, and would gladly have given what assistance and comfort they could; but they knew Bux Khán's peculiar temper too well to care to make any offer of help, or to express their sympathy. Consequently, he was left alone with his child, his only visitor being Captain Eaton, who frequently looked in to inquire how the child was. At length the little fellow became so ill, that Bux Khán, alarmed at last, smothered his jealous feelings, and procured the assistance of two women, the wives of mahouts, to help him to tend and nurse the child. But it was too late. One evening, as Eaton sat at dinner, his butler came in and reported that the child was dead.

The Englishman knew very well what child was referred to; so, after dinner, he repaired to the kheddah to see if he could do anything or be of any assistance. There was a dim light burning in Bux Khán's hut; and looking in at the door, Eaton saw the Afghan sitting cross-legged on the floor with the body of the child on his lap. He was not fondling it, but was sitting silent and motionless, looking down on the little dead face. There was an expression on the man's dark face which made Captain Eaton hesitate to address him, not from fear, but from respect for a strong man's agony. After looking on quietly for a few seconds, he stepped softly in and touching the jemadar gently on the shoulder, whispered: 'Bux Khán, remember what is written. Verily, children are as the flowers of the earth. Death as the hot wind cometh, and they wither and die. But they shall bloom again in the Paradise of the Faithful, saith the Merciful One.'

Bux Khán did not look up or make any reply, so the captain went quietly away.

That night, about two hours before dawn, the watcher at the kheddah gate saw the jemadar pass out, carrying his dead child in his arms and with a mattock over his shoulder. Guessing what he was about to do, the man followed him, carefully keeping out of sight. Bux Khán strode rapidly on till he came to a mango tope about half a mile from the town. In the centre of the tope stood the ruined tomb of a Mohammedan saint. Having laid the body of the child gently on the steps of the tomb, the Afghan, by the light of the stars, dug a deep grave at the back of the tomb. Then the watcher saw him take up the body of the child, and, without looking at its face or making any demonstration of affection or sorrow, place it in the grave and shovel the earth on it. When the grave was filled up, he collected together a number of heavy stones, and piled them on the spot, to prevent the jackals from digging up the body. While looking for the stones, Bux Khán approached near to where the watcher was standing behind a mango tree, and the man crouched and trembled, for he knew what to expect if the jemadar discovered him. Having buried his child, Bux Khán stood for a few moments silent over the grave, then turned slowly away and strode back to the kheddah.

Next day, the jemadar resumed his work as

if nothing had happened. It was soon known throughout the kheddah what he had done with the child, and so no questions were asked. At first, there was little in his appearance or manner to show that he was much affected at the loss of his child. He went about his work much as usual, quietly and silently. But at the end of a week or two it became very plain to Captain Eaton, who was watching him anxiously, that there was something very wrong with him. He became gaunt and haggard. Some of the men reported that he hardly ever slept, and that he was accustomed to move restlessly about all night in his hut, or walk up and down the elephant-yard muttering to himself. One mahout declared that he had watched him walking about one night, and overheard him talking to himself, as if addressing a child by his side. It happened one day that Captain Eaton, accidentally glancing into his hut as he walked past, saw him sitting there on the floor gazing at something in his lap. A second glance showed it to be some of the dead child's clothes and ornaments. Bux Khán was regarding a pair of little gold anklets that lay in the palm of his huge brown hand, when he caught sight of the figure standing in the doorway. The mad glare in his eyes as he looked up and gazed fixedly at his master for a few seconds, as if he did not recognise him, convinced Captain Eaton that his suspicion that the man's reason was shaken was correct. Seeing in what mood the jemadar was, he walked on without a word.

The fear and awe with which the jemadar was regarded by everybody in the kheddah now reached such a pitch as to cause Eaton great annoyance and trouble. Not a man would speak to him except when it could not be avoided, and the mahouts and others constantly came to their master for orders and instructions for which they should have gone to the jemadar. The women and children in the kheddah fled when they saw him approaching, and hid themselves out of his sight, as if he had been a wild beast. He was universally credited with possessing all sorts of strange and malign powers, so that any person on whom the jemadar happened to look with his gleaming sunken eyes, immediately commenced to mutter charms, to avert the evil eye he supposed to be cast on him.

Several weeks passed, and the jemadar had not said or done anything that could be considered the act of a madman. Nevertheless, matters were in an unsatisfactory state, and Eaton was anxiously debating with himself what course he should take. One day he received a letter from government which assisted to help him out of his difficulty. He was ordered to break up his establishment, and to take all the elephants to Shoránpúr, a place about sixty miles from Jehanabad, and there to organise a new kheddah. The bustle and excitement of the next few days seemed to have the effect of rousing the jemadar, and he exerted himself to carry out his master's orders with such intelligence and promptness, that Captain Eaton was greatly pleased, and his suspicions as to the man's state of mind began to wear off.

Within a short time, the kheddah was removed to Shoránpúr. It was a small town,

not far from the frontier, and was a wild, unsettled, out-of-the-way place, the haunt of numerous dacoits, Afghan horse-thieves, and other bad characters. It was not long before Captain Eaton realised what a savage, lawless place it was. One evening, a week or two after his arrival at Shoránpúr, as he sat in his room counting over a large number of rupees which were to be paid away next morning, being the wages of the establishment for the past month, he heard some one enter the room, and looking up, saw Bux Khán.

'I have something to report, Sahib,' he said as he salaamed.

'What is it, jemadar ?'

'As I was sitting in a shop in the bazaar this afternoon, I overheard two countrymen of mine, men from the mountains, plotting with some of our Bengalee mahouts to murder the Sahib to-night and to rob him of that money !' and he pointed to the heap of rupees on the table.

This was startling news. The Englishman looked steadily in the jemadar's face, thinking it might possibly be the delusion of a disordered mind. But there was nothing in his face or in the way he spoke to countenance the idea. He was perfectly quiet and composed, and his eyes were steadier and had less of the strange gleam in them that had before so impressed Captain Eaton.

'Did you recognise any of the mahouts? How many were there?' he asked.

'There were three; and I knew them at once by their voices, though I did not see them. They were Toolsee, Bannajee, and the old man Lal Dass.'

'Did you hear what their plan was ?'

'Yes, Sahib. They intend to enter your room about midnight, and to cut your throat while you are sleeping, and then to carry off the rupees.'

'What do you think we ought to do, jemadar?' asked Eaton, after a pause, while he thought over this unwelcome piece of news.

'If the Sahib will permit me to sit in his room, I think we should wait for them, and receive them when they come.' And a look of grim satisfaction, almost a smile, passed over the jemadar's face.

'Will we two be strong enough to deal with the five, do you think ?'

'Yes, Sahib,' was the reply. 'The Bengalees are cowardly dogs, and will not fight. I will manage my two countrymen, if need be.'

So it was decided, after a few more minutes' conversation, that Captain Eaton and the jemadar should sit up together armed, and arrest the villains in the act of breaking into the house.

About ten o'clock that night the jemadar presented himself at the window of his master's bedroom and was quietly admitted. Without a word, he took up his position in one corner, and having girded himself for action, squatted down on the floor with his *kukri* or heavy convex-edged Afghan knife across his knees. Captain Eaton seated himself opposite to him on the other side of the window, laying his sword and loaded revolver on the table before him.

About midnight, the jemadar suddenly moved and whispered : 'Sahib, they are coming !'

Both men rose to their feet, and grasping

their weapons, stepped back into the dark corners of the room. They heard whispering voices outside; the window was pushed open, and one by one the five robbers crept into the room. Suddenly there was a faint gleam of light. One of the men had taken a lighted lamp out of an earthenware pot in which he had been carrying it. The next moment there was a rush and a loud crash. The jemadar had sprung on to one of the Afghans and hurled him to the ground with stunning force. At the same moment, Captain Eaton sprang to the window, and swinging his sword and holding his revolver ready to fire, shouted : 'Drop your weapons !'

The next instant the captain was lying on his back. The other Afghan had rushed at him, and in stepping back to strike at him with his sword, Eaton had tripped and fallen. His revolver exploded harmlessly as he fell. The Afghan threw himself on him, and for some moments there was a furious struggle on the ground. Suddenly, the Afghan gasped and fell back, almost cloven in two. The jemadar having disabled and disarmed his man, had come to his master's assistance, and with one blow of his trenchant blade had struck the life out of the Afghan. Meanwhile, the rascally Bengalee mahouts, thoroughly scared by the suddenness of the attack and the report of the revolver, were grovelling on their faces, howling for mercy. Lights were soon procured, and also ropes, and the five ruffians, four alive and one dead, removed. When the news spread, the excitement in the kheddah was tremendous, and for the rest of the night, Captain Eaton's bungalow was crowded with his people, all anxious to hear the particulars of what had taken place, and to congratulate their master on his escape.

Next morning, after having sent his four prisoners off to the jail and handed over the body of the Afghan to the coroner, Captain Eaton called together all the people employed at the kheddah, and publicly thanked the jemadar for his fidelity, skill, and courage. Bux Khán acknowledged the honour with a salaam, but without remark and without a smile.

That same morning the jemadar came to his master and asked for leave of absence.

'Certainly,' said Captain Eaton. 'For how long do you want leave ?'

A strange sort of expression passed over the jemadar's face as he said, after a moment's hesitation : 'Two days, Sahib.'

It was granted at once; and the jemadar left the kheddah a short time afterwards.

As Eaton was at dinner that evening, his butler spoke to him about some business connected with the kheddah, whereupon his master ordered that nothing should be done in the matter till the return of the jemadar.

The butler fidgeted about for some moments, and then said : 'Sahib, the jemadar will never return.'

'Never return ! Why, he only asked for two days' leave.'

'Yes, Sahib, I know. But the jemadar will never return.'

'What do you mean ? Do you think he has gone back to his own country ?'

'No, Sahib.'

'Then what makes you think he will not return?' demanded Eaton impatiently.

'Sahib, he took his gun with him,' said the butler with a nod full of meaning.

'Took his gun with him!' repeated Eaton in surprise. Then a light broke in on him. 'Why, you don't mean to say he intends to destroy himself?'

'That is what everybody says, Sahib.'

'But why should he? I don't understand.'

'Sahib,' replied the butler earnestly, 'ever since the death of his child, the jemadar has been mad, if he was not so before. He would have killed himself before this, but for one thing.'

'What was that?'

'He owed you a debt of gratitude, Sahib, for saving his child from Shaitán, and until that was paid off, he did not feel at liberty to do as he wished. But that debt was settled last night, when he saved your life from those murdering dogs, and now he is free. You will never see the jemadar again, Sahib.'

Captain Eaton immediately sent for several respectable, elderly men connected with the kheddah, and having told them of his butler's suspicions, asked their opinion. They unanimously agreed that the jemadar would shoot himself. They also gave it as their opinion that he would first visit his child's grave at Jehanabad.

It was a sleepless night that the Englishman passed. He had taken a fancy to the wild, lawless, strange-natured man, and it was a shock to him to realise what was about to happen. He lay awake for hours, trying to think how he could avert the catastrophe, which he now felt would surely take place. He decided at length to start next morning and follow the jemadar to Jehanabad, and if he found him, to try and induce him to return to the kheddah at once. But he felt very little hope of succeeding.

About four o'clock in the morning he got up, and having roused his servants, ordered them to get everything ready for a five days' journey to Jehanabad. An hour before daybreak, he started, riding, accompanied by a couple of the fleetest and best elephants in the kheddah, carrying supplies and camp necessities. They travelled as fast as they could all day, only halting for an hour at mid-day for rest and food. In the evening they arrived at a small village, having ridden more than thirty miles, and accomplished half their journey. As they rode along, Eaton inquired of the people they met and at the bazaars through which they passed whether any one had seen the jemadar. Bux Khán was a man of too striking an appearance to escape notice; and in answer to the Englishman's inquiries, many persons stated that they had seen a very tall Afghan carrying a gun, walking rapidly in the direction of Jehanabad, the previous afternoon.

Having passed the night in a native caravan-sera in the village, Captain Eaton very early next morning resumed his journey. He continued to inquire every now and then of the passers-by whether they had met the jemadar; and it soon became evident from their replies to the question as to when they had seen him,

that he had walked straight on without stopping to rest or to eat or drink. As they neared Jehanabad, Eaton's heart sank within him, for he knew that the jemadar must have got there during the previous evening, and what had happened during the past eighteen hours, he shuddered to think. So anxious was he, that he would not stop to rest at mid-day, but pushed on and rode ahead of the elephants. It was early in the afternoon when he got to Jehanabad, and riding through the town, made his way to the mango tree where he knew Bux Khán had buried his child. He soon came in sight of it. It was quite deserted; not a soul was in sight. When he came in sight of the saint's tomb, however, his heart stood still, for a number of noisy crows were perched on the tree overshadowing it. The gallant Englishman drew rein and rode slowly up to and round the tomb. His worst fears were realised; for there, across the grave of his child, his empty gun by his side, lay Bux Khán dead.

OCCASIONAL NOTES.

A NEW INSTRUMENT OF DEATH.

A WEAPON has been invented which adds fresh terrors to war. Hitherto, machine-guns—the Gardners, Gatlings, Nordenfelts, &c.—have been dependent upon hand-power for performing the various operations of loading, firing, and extracting the empty shells. This arrangement, besides having other drawbacks, has necessitated the constant exposure of the gunner to the fire of the enemy. But the happy notion has recently occurred to an American engineer, Mr Hiram S. Maxim, to utilise the force generated by the discharge of one shot for the discharge of another, and thus introduce an automatic principle into the firing of a gun. The idea has borne fruit; and members of the Institution of Mechanical Engineers, as also representatives of the government, have made the acquaintance, in the Hall of the Institution of Civil Engineers, London, of the Maxim Automatic Machine-gun; while more recently still, it has been placed before the notice of visitors to the International Inventions Exhibition.

The principle of the gun—which is four feet nine inches long, and stands three feet upon its tripod—is briefly this: the power derived from the recoil of the barrel, the breech-block and the lock upon the first shot—which is fired by a hand-trigger—is employed for the purpose of firing the second, the force generated by the second shot being utilised for firing the third, and so on. The operations of detaching the cartridge-shell, reloading, and pulling the trigger are carried out with lightning swiftness, it being possible to fire as many as five shots per second; and as the mechanism is so constructed that the weapon feeds itself from a belt of cartridges which can be made of any length, and added to in sections at pleasure, it follows that the gun can be continuously fired for any length of time. Then, too, it can, even while shots are being discharged, be shifted and turned in all directions; so that—were such a proceeding at all desirable—a gunner could write his name with bullets on the wall of a fort or the hull of a

ship. It will not unnaturally occur to the reader that this constant firing will make the weapon hot beyond the endurance of metal; but Mr Maxim has provided against the difficulty in question. He has placed his gun in a metal case, and the space intervening between the two he fills with water. As regards the renewal of this water, it may be mentioned that thirty thousand shots have been fired by the gun without the water being replenished. Frequently the cartridges in the machine-guns at present in use 'jam' and 'hang fire'; and it is satisfactory to know that in the automatic gun they cannot 'jam'; and if one 'hangs fire,' the gun will wait for it. If a cartridge fails to go off at all, it can be abstracted by hand in the space of about half a second. We must not fail to mention two important features of the automatic gun. By means of a simple apparatus, the smoke from the barrel can be kept from entering the surrounding air, and thereby obscuring the vision of the gunner; and a felt-casing has been devised, which when placed over the weapon, makes it fire noiselessly. In order to obtain protection in different countries for the various parts of the gun, Mr Maxim has had to take out as many as one hundred patents.

With reference to the destiny of the weapon, some persons have asked: 'Why does not the English government take it up?' and in some quarters the answer has been supplied—though how far it is authorised by the facts of the case, we do not know—that 'the government have heard that Mr Maxim is now designing an improvement upon his invention, and would prefer to avail themselves of the more perfect instrument.' In truth, such an improvement is being constructed in Mr Maxim's workshop; and he confidently says that it will be much simpler than the present complicated form of weapon, and will have as few parts as any other single-barrel gun. It will be capable of discharging projectiles of one and seven-eighth inches in diameter, six inches in length, and three pounds in weight, at the rate of one hundred and fifty per minute. Mr Maxim further states that his Automatic Machine-gun will be capable of being constructed of almost any size.

SCAMPED AND DEFECTIVE PLUMBER-WORK.

One of the wealthy and important London Companies, having been awakened to a sense of duty, has decided to do something to justify its existence, and connect itself in a practical way with the trade from which it takes its name. Most proprietors and householders have at one time or another suffered from bad plumbing, with the attendant discomfort and danger to health of leaking gas-pipes, the presence of sewer-gas, or defective water-pipes. At the dinner of the Plumbers' Company held lately at Chingford, Epping Forest, the Master (Mr G. Shaw) made an interesting and important statement. He said very truly that plumber-work, as regards health, stands first among the crafts; but that, from some causes in recent years, the average of work done in many branches had distinctly deteriorated.

As a result of the investigations of the Plumbers' Company, and of a congress of plumbers and

sanitarians held under their auspices, he tabled the following reasons for such being the case. The identity of the plumber's craft had been to a great extent lost or obscured through the merging or amalgamation of the various branches of the building-trade. Houses are built in large numbers without any sufficient definition of the plumber-work, and the natural consequence is that it is done 'anyhow,' and by persons who are not practical plumbers. Also, the system of apprenticeship lads for a term of years to the trade having fallen off, it had caused an excessive influx of men not properly qualified plumbers. Much unsuitable material was being used, the standard quality of materials not being determined. Finally, that the public regulations which deal with certain details of the construction of new houses, and their connection with the public sewers, do not sufficiently recognise the importance of securing the efficiency of the plumber-work done in these houses.

As some protection to the public against scamped and defective work, the court of the Plumbers' Company intend to recommend and further a scheme for the registration of plumbers, both masters and journeymen, for giving technical instruction in plumbing, and for the inspection of plumber-work in new houses. This decision does not come a day too soon, as the amount of scamped and defective plumber-work, from one cause or another, throughout the country is enormous.

D E A T H.

Weep not that Death has bared his blade
And thrust it in the springing corn,
While bending stems that droop and fade
He marks and passes by in scorn.

Weep not that some make prayer in vain
To Death through all the weary days;
His sickle reaps the noblest grain,
And leaves the tares beside the ways.

Weep not to see his hand appear
And beckon o'er the western sea;
The gallant hearts to us so dear,
O Death, are dearer still to thee.

Weep not that strong young spirits lie
Of light and life and love bereft;
Nay, weep not for the good that die,
But for the evil that are left.

J. WILLIAMS.

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